

CLAIMS

1. An optical burst-switched router, comprising:

an optical switch for routing optical information from an incoming optical transmission medium to one of a plurality of outgoing optical transmission media, each outgoing media able to transmit optical information over a plurality of channels;

a delay buffer coupled to said optical switch for providing a plurality of different delays for delaying selected information between said incoming transmission medium and one of said outgoing optical transmission media; scheduling circuitry associated with each respective outgoing medium, comprising an associative processor for storing information on both unscheduled time for each channel on the respective outgoing medium and time gaps on each channel on the respective outgoing medium.

2. The router of claim 1 wherein said incoming optical transmission medium and outgoing optical transmission media comprise optical fibers.

3. The router of claim 1 wherein said scheduling circuitry includes an associative memory having a plurality of entries for storing a beginning value and an ending value for each instance of a time gap or unscheduled time.

4. The router of claim 3 wherein each entry has a channel value indicating an associated channel on said respective outgoing optical transmission medium.

5. The router of claim 3 wherein unscheduled time is stored in an entry as a beginning value indicative of the beginning of the unscheduled time and wherein the ending value is set to a predetermined value.

6. The router of claim 3 and further comprising a linear array of memory cells, each cell associated with a respective entry in the associative

memory, wherein each cell indicates whether the respective entry is associated
4 with either a time gap or with unscheduled time.

7. The router of claim 1 wherein said associative processor for each
2 channel includes circuitry for searching through said entries of said associative
memory.

8. A method of routing optical information through an optical burst-
2 switched router including an optical switch for routing optical information from
an incoming optical transmission medium to one of a plurality of outgoing
4 optical transmission media, each outgoing media able to transmit optical
information over a plurality of channels, and a delay buffer coupled to said
6 optical switch for providing a plurality of different delays for delaying selected
information between said incoming transmission medium and one of said
8 outgoing optical transmission media, comprising the steps of:
for each respective outgoing optical transmission medium, storing
10 information on both unscheduled time for each channel and time gaps on each
channel in an associative memory; and
12 searching said associative memories for available periods to schedule an
optical burst.

9. The method of claim 8 wherein said incoming optical transmission
2 medium and outgoing optical transmission media comprise optical fibers.

10. The method of claim 8 wherein said storing step comprises the step
2 of storing a beginning value and an ending value for each instance of a time gap
or unscheduled time in an entry in said respective associative memory.

11. The method of claim 10 and further comprising the step of
2 associating a channel value indicating an associated channel on said respective
outgoing optical transmission medium with each entry.

12. The method of claim 10 wherein unscheduled time is stored in an
2 entry as a beginning value indicative of the beginning of the unscheduled time
and wherein the ending value is set to a predetermined value.

13. The method of claim 10 and further comprising indicating whether
2 each entry is associated with either a time gap or with unscheduled time.